Air Quality Permitting
Statement of Basis

October 26, 2005

Permit to Construct No. P-050306

Idaho State University
Pocatello, ID

Facility ID No. 005-00029

Prepared by:

Carole Zundel, Permit Writer
AIR QUALITY DIVISION

FINAL PERMIT

Table of Contents

Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
BACT	Best Available Control Technology
Btu	British thermal unit
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
gr/dscf	grains (1 lb = 7,000 grains) per dry standard cubic foot
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Idaho State University operates the following equipment for the support of the university:

- 25 boilers
- Pathological waste incinerator
- Four emergency generators
- Two kilns
- Burnoff furnace
- Melting furnace

All units operate on natural gas except Boiler No. 2, which operates on coal, and two of the generators, which use diesel.

3. FACILITY / AREA CLASSIFICATION

Idaho State University is defined as a synthetic minor facility because, without permit limits on the potential to emit, the SO_2 and NO_x emissions would each exceed 100 tons per year. The AIRS classification is "SM" because the potential to emit of SO_2 and NO_x are limited to less than major source levels.

The facility is located within AQCR 61 and UTM zone 12. The facility is located in Bannock County which is designated as nonattainment for PM_{10} and unclassifiable for all other criteria pollutants (CO, NO_x, SO_2, lead, and ozone).

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant at Idaho State University. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

Idaho State University has applied for a PTC for a new natural gas-fired boiler.

4.1 Application Chronology

3/17/05	PTC application received
4/15/05	Facility draft requested
4/27/05	Application declared incomplete
5/31/05	Additional information received
6/24/05	Application declared complete
8/30/05	Facility draft permit issued

9/16/05	Response to draft permit received from facility via e-mail
10/13/05	Processing fee received

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.:

5.1 Equipment Listing

Boiler No. 4
Manufacturer: Keystone
Model: Victory
Rating: 60,000 lb steam/hr
72.84 MMBtu/hr
Fuel: Natural gas
Control device: Coen low-NO_x burner

5.2 Emissions Inventory

The estimated emissions from Boiler No. 4 were based on emission factors from AP-42 for small boilers, controlled – low-NO_x burners, and operating hours of 6,552 hours per year. The operating capacity of the boiler is 72.84 MMBtu/hr.

Table 5.1 EMISSION INVENTORY

Source	PM[a]		PM_{10}[b]		Nitrogen Oxides		Sulfur Dioxide		Carbon Monoxide		VOC[c]	
	(lb/hr)[d]	(T/yr)[e]	(lb/hr)[d]	(T/yr)[e]	(lb/hr)[d]	(T/yr)[e]	(lb/hr)[d]	(T/yr)[e]	(lb/hr)[d]	(T/yr)[e]	(lb/hr)[d]	(T/yr)[e]
Boiler No. 4	0.54	1.8	0.54	1.8	3.57	11.7	0.04	0.1	6.00	19.7	0.39	1.3

a) Particulate Matter
b) Particulate Matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
c) Volatile Organic Compounds
d) Pounds per hour
e) Tons per year

The toxic air pollutant estimated emissions are shown in Appendix B.

5.3 Modeling

The modeling analysis that was done for this project demonstrated compliance with applicable NAAQS to the satisfaction of DEQ. The modeling analysis is included as Appendix C.

The CO emission limit was increased to 120% of the estimated emissions to allow flexibility for CO testing. The CO estimate is based on AP-42 which is an average estimation. DEQ air dispersion modeler verified that this limit is conservative and will not result in a modeled exceedance of the NAAQS.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

A permit to construct is required for this boiler because it is a new stationary source with estimated emissions of PM_{10}, NO_x, and CO which do not meet the exemption criteria.

IDAPA 58.01.01.210..... Demonstration of Preconstruction Compliance with Toxic Standards

The toxic air pollutant emissions inventory is shown in Appendix B. IDAPA 58.01.01.210 requires that the toxic air pollutants be less than the screening emission level (EL) or that the modeled concentrations be below the acceptable ambient concentration. The maximum annual impacts of carcinogenic toxic air pollutants (TAPs) were below applicable acceptable ambient concentration for carcinogens (AACC). Emissions of all non-carcinogenic TAPs were below the screening emissions levels (ELs), below which dispersion modeling is not required. Compliance with the TAPs is demonstrated by Permit Condition 2.7, which requires the use of natural gas exclusively.

IDAPA 58.01.01 675..... Fuel Burning Equipment

This regulation establishes particulate matter emission standards for fuel burning equipment. Fuel burning equipment is defined in IDAPA 58.01.01.006.41 as "Any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer."

This applies to the boiler. The permit requires compliance with this rule. The following calculation demonstrates that the calculated PM concentration is less than the regulatory limit of 0.015 gr/dscf at 3% O_2.

$$\frac{73\ \text{MMBtu}}{1\ \text{Hour}} \times \frac{1\ \text{scf NG}^{c}}{1{,}050\ \text{Btu}^{a}} \times \frac{7.6\ \text{lbs PM}^{a}}{1\ \text{MMscf NG}} \times \frac{1}{11{,}543\ \text{dscfm}^{b}} \times \frac{1\ \text{Hour}}{60\ \text{Min.}} \times \frac{7{,}000\ \text{grains}}{\text{lb}}$$

= 0.005 grains/dscf

[a] AP-42

[b] From combustion analysis, dry standard cubic feet per minute

[c] standard cubic feet of natural gas

This analysis is applicable for natural gas, and Permit Condition 2.7 requires the use of natural gas exclusively.

40 CFR 60 Subpart Dc ..... Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Applicability is defined as follows:

"(a) Except as provided in paragraph (d) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million Btu per hour (Btu/hr)) or less, but greater than or equal to 2.9 MW (10 million Btu/hr)."

The boiler is a new steam generating unit and is rated at 72.84 MMBtu/hr. Therefore, Subpart Dc is applicable.

Section 60.48c requires notification to the EPA of construction and also the following recordkeeping requirement:

(g) The owner or operator of each affected facility shall record and maintain records of the amounts of each fuel combusted during each day.

5.5 Permit Conditions Review

This section quotes specific permit conditions that were developed for this boiler. Permit conditions that are an incorporation of the *Rules*, such as opacity, are not explained here because these rules apply generally to this type of source and were not developed specifically for this boiler.

2.3 Emissions Limits

The carbon monoxide (CO) emissions from the Boiler No. 4 stack shall not exceed 7.2 pounds per hour (lb/hr).

The CO emission limit was established, and testing required, to ensure that 120% of the CO emissions estimated by the facility are not exceeded.

2.6 Throughput Limits

The amount of natural gas used by Boiler No. 4 shall not exceed 468 million standard cubic feet (MMscf) per any consecutive 12-month period.

The emissions from the boiler were estimated at 6,552 hours of operation per year. The operating capacity of the boiler is 72.84 MMBtu/hr. Because the emissions demonstrated compliance with the NAAQS and with the toxic air pollutant increments at that rate, the natural gas throughput limit for the boiler is derived as follows:

6,552 hours/yr x 72.84 MMBtu/hr x 1 scf natural gas/1,020 Btu* = 468 MMscf natural gas/yr

*1,020 Btu/scf supplied by ISU per e-mail dated June 17, 2005

2.7 Fuel Type

Boiler No. 4 shall be fueled on natural gas exclusively.

This limit ensures compliance with the grain loading limit (Permit Condition 2.4) and all emission estimates on which this permit assessment is based.

2.8 Throughput Monitoring

The permittee shall monitor and record the amount of natural gas combusted in Boiler No. 4 as specified in 40 CFR 60.48.c(g). In addition, the permittee shall monitor and record the amount of natural gas combusted in Boiler No. 4 each month and for the most recent 12-month period. Records of this information shall remain on site for the most recent two-year period and shall be made available to DEQ representatives upon request.

As discussed in Section 5.4 of this statement of basis, 40 CFR 60.48c(g) requires tracking of natural gas used and is incorporated into this permit with this permit condition. In addition in order to ensure that the annual throughput limit established by Permit Condition 2.6 is not exceeded, monthly and annual tracking of the fuel used is required.

2.9 Performance Test

The permittee shall conduct a performance test to measure CO emissions from Boiler No. 4 within 180 days of commencement of operation of the boiler. The performance testing will be conducted to demonstrate compliance with the emission rate limit listed in Permit Condition 2.3.

The performance test shall be performed in accordance with IDAPA 58.01.01.157. The fuel type and amount to Boiler No. 4 and the steam production in pounds per hour (lb/hr) shall be recorded during the performance test.

*2.10 **Compliance Test Protocol***

The permittee is strongly encouraged to submit a test protocol to DEQ for approval at least 30 days prior to the compliance test required in Permit Condition 2.9. If the permittee fails to obtain prior written approval by DEQ for any testing deviations, DEQ may determine that the test does not satisfy the testing requirements.

*2.11 **Compliance Test Report***

The permittee shall submit a report of the results of the compliance test required in Permit Condition 2.9, including all required process data, to DEQ within 30 days after the date on which the stack sampling is concluded.

Permit Conditions 2.9, 2.10, and 2.11 – Performance Testing

These permit conditions were established to assess compliance with the carbon monoxide (CO) emission limits.

Permit Condition 2.12 was added to inform the facility of the correct addresses to send correspondence.

*2.12 **Address***

Any correspondence to the EPA shall be sent to:

US EPA
Region 10
1200 Sixth Avenue
Seattle, WA 98101

Any correspondence to the DEQ shall be sent to:

Idaho Department of Environmental Quality
Pocatello Regional Office
444 Hospital Way #300
Pocatello, ID 83204

6. PERMIT FEES

A PTC application fee is required as specified in IDAPA 58.01.01.224. This fee was paid on March 31, 2005. A PTC processing fee of $5,000 is due as required by IDAPA 58.01.01.225 for a new source with an increase of emissions of 10 to less than 100 tons per year. The processing fee was received by DEQ on 10/13/05. The increase of emissions for this facility is 37.8 tons per year.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	11.7	0	11.7
SO_2	0.1	0	0.1
CO	19.7	0	19.7
PM_{10}	1.8	0	1.8
VOC	1.3	0	1.3
TAPS/HAPS	3.2	0	3.2
Total:	37.8	0	**37.8**
Fee Due	**$5,000.00**		

7. PERMIT REVIEW

7.1 *Regional Review of Draft Permit*

The draft permit was provided to the DEQ Pocatello Regional Office for review on August 30, 2005. The regional office had no comments.

7.2 *Facility Review of Draft Permit*

The draft permit was provided to Idaho State University for review on August 30, 2005. The facility replied via e-mail that they had no comments and requested that the permit be issued final as soon as the processing fee is received by DEQ.

7.3 *Public Comment*

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c from July 6, 2005 to August 8, 2005. During this time, there were not comments on the application and no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Idaho State University be issued final PTC No. P-050306 for the installation of a new boiler.

CZ/sd Permit No. P-050306

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Appendix A

AIRS Information

P-050306

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Idaho State University
Facility Location: 749 E. Humbolt, Pocatello
AIRS Number: 005-00029

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	SM							U
NO_x	SM							U
CO	B							U
PM_{10}	B							N
PT (Particulate)	B		B					U
VOC	B							
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					
			Dc					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

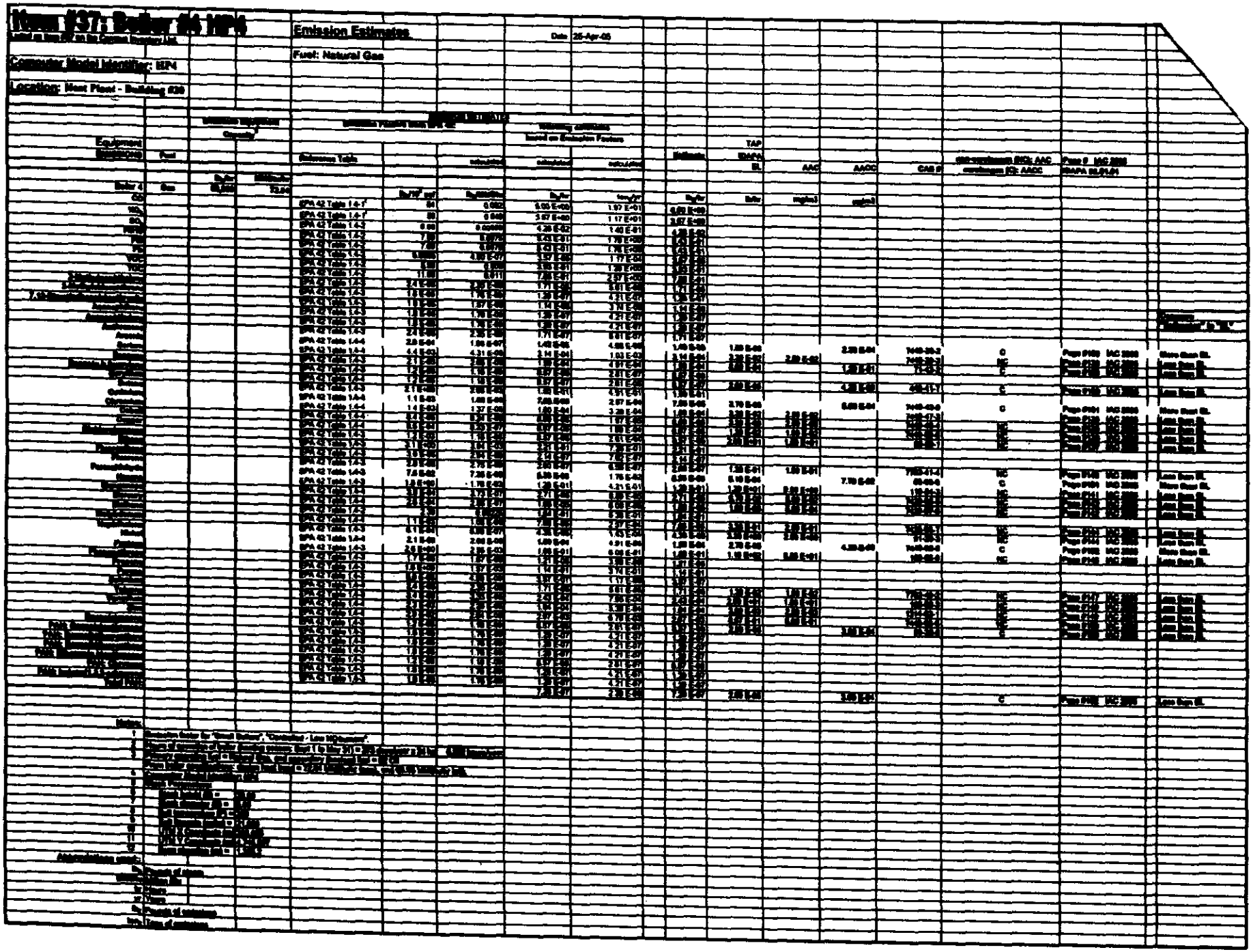
C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Emissions Inventory

P-050306



Appendix C

Modeling Review

P-050306

MEMORANDUM

DATE: August 22, 2005

TO: Carole Zundel, Air Quality Division

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator, Air Quality Division KS

FROM: Dustin Holloway, Modeling Analyst, Air Quality Division DH

PROJECT NUMBER: P-050306

SUBJECT: Modeling Review for the Idaho State University in Pocatello

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1. SUMMARY

Idaho State University (ISU) submitted facility-wide ambient air quality dispersion modeling in support of a permit to construct (PTC) for a 72.84 MMBtu/hr natural gas-fired heating boiler. The analysis includes predicted impacts from all sources at the facility for PM_{10}, NO_x, SO_2, CO, and lead. DEQ did not review the lead analysis because the facility-wide lead emissions rate is less than the applicable modeling thresholds identified in DEQ's air quality modeling guideline. The following table summarizes the key assumptions used in the analysis which should be considered when developing the permit.

Table 1.1 KEY ASSUMPTIONS USED IN MODELING ANALYSIS

Assumption	Explanation
The emergency generator G35 will operate for less than 12 hours per day during routine maintenance and testing.	This assumption was used to demonstrate that the impacts from this facility, when added to the applicable background concentrations, will not cause or significantly contribute to a violation of the PM_{10} NAAQS.

Based on the results of the applicant's and DEQ's analyses, DEQ has determined that the modeling analysis: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) appropriately adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations at all receptor locations, when appropriately combined with background concentrations, were below stated air quality standards; 5) showed that the increase in toxic air pollutant (TAP) concentrations are within the applicable allowable concentrations in IDAPA 58.01.01.585-586.

2. BACKGROUND INFORMATION

2.1 *Applicable Air Quality Impact Limits*

ISU is located in Pocatello, within the Portneuf Valley in Bannock County. "EPA determined that the Portneuf Valley nonattainment area has attained the National Ambient Air Quality Standards for particulate matter with an aerodynamic diameter of less than or equal to 10 microns by the attainment date of December 31, 1996, as required by the Clean Air Act" (Federal Register, Volume 67, No. 143, July 25, 2002). DEQ submitted the "Portneuf Valley PM-10 Nonattainment Area State Implementation Plan, Maintenance Plan, and Redesignation Request" to EPA on June 30, 2004. On May 20, 2005, EPA proposed the "Approval and Promulgation of Implementation Plans and Designation of Areas for Air Quality Planning Purposes: Portneuf Valley, Idaho, Area" (Federal Register, Volume 70, Number 97, May 20, 2005). However, the area remains designated as a nonattainment area until EPA approves the maintenance plan and proposed redesignation. The area is designated attainment or unclassifiable for all other criteria air pollutants. Table 2.1 provides significant contribution levels (SCL), national ambient air quality standards (NAAQS) for criteria pollutants, and allowable TAP increments. When ambient impacts from project-specific emissions exceed the SCL facility-wide modeling is necessary to demonstrate compliance with NAAQS.

Table 2.1 APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels ($\mu g/m^3$)[a, b]	Regulatory Limit ($\mu g/m^3$)[c]	Modeled Value Used[d]
PM_{10}[e]	Annual	1	50[f]	Maximum 1st highest[g]
	24-hour	5	150[h]	Maximum 6th highest[i] Highest 2nd highest[j]
CO	8-hour	500	10,000[k]	Highest 2nd highest[g]
	1-hour	2000	40,000[k]	Highest 2nd highest[g]
SO_2	Annual	1	80[f]	Maximum 1st highest[g]
	24-hour	5	365[k]	Highest 2nd highest[g]
	3-hour	25	1,300[k]	Highest 2nd highest[g]
NO_2	Annual	1	100[f]	Maximum 1st highest[g]
Arsenic	Annual	N/A	2.3E-04	Maximum 1st highest[g]
Cadmium	Annual	N/A	5.6E-04	Maximum 1st highest[g]
Formaldehyde	Annual	N/A	7.7E-02	Maximum 1st highest[g]
Nickel	Annual	N/A	4.2E-03	Maximum 1st highest[g]

[a] IDAPA 58.01.01.006.91
[b] Micrograms per cubic meter
[c] IDAPA 58.01.01.577 for criteria pollutants, IDAPA 58.01.01.585 for non-carcinogenic toxic air pollutants IDAPA 58.01.01.586 for carcinogenic toxic air pollutants.
[d] The maximum 1st highest modeled value is always used for significant impact analysis and for all toxic air pollutants.
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[f] Never expected to be exceeded in any calendar year.
[g] Concentration at any modeled receptor.
[h] Never expected to be exceeded more than once in any calendar year.
[i] Concentration at any modeled receptor when using five years of meteorological data.
[j] The highest 2nd high is considered to be conservative for five years of meteorological data.
[k] Not to be exceeded more than once per year.

2.2 *Background Concentrations*

DEQ updated the background concentration data for Idaho in the Spring of 2003[1]. Representative background values used in this analysis were based on monitored values for Pocatello's PM_{10}, NO_x, and SO_2 concentrations and default values for urban CO. PM_{10} monitoring data prior to 2001 were not considered in the determination of background concentrations. These data were substantially impacted by emissions from the FMC facility which ceased operation in the year 2000. The applicant submitted an analysis for lead, however DEQ did not review it because the facility-wide lead emissions are below the applicable modeling thresholds. The following table summarizes the background concentrations used in the analysis.

Table 2.2 BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background concentrations ($\mu g/m^3$)[a]
PM10	24-hour	124
	Annual	28
CO	1-hour	15,600
	8-hour	5,200
SO_2	3-hour	280
	24-hour	94
	Annual	21
NO_2	Annual	32

[a] Micrograms per cubic meter.

[1] Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling.* Memorandum to Mary Anderson, March 14, 2003.

3. ASSESSMENT OF MODELING ANALYSIS

3.1 Modeling Methodology

ISU performed the ambient impact analysis using the ISCPRIME air quality dispersion model. The following table summarizes the parameters used in the model and DEQ's review and determination of those parameters.

Table 3.1 MODELING PARAMETERS

Parameter	What Facility Submitted	DEQ's Review/Determination
Modeling protocol	DEQ did not review a modeling protocol for this application.	Although no protocol was reviewed, the submitted analysis was performed in accordance with approved methods.
Model Selection	ISCPRIME	ISCPRIME is an appropriate model for this facility because receptors are located within building recirculation cavities.
Meteorological Data	1987-1991 Pocatello surface meteorological data and 1987-1991 Boise upper air meteorological data.	This is the most representative meteorological data available for this area.
Model Options	Regulatory default options were used.	Regulatory default options are appropriate for this facility.
Land Use	Rural	This facility is located within Pocatello city limits. However, the land use around this facility is primarily suburban land to the west and primarily undeveloped land to the east.
Terrain	Terrain effects were calculated.	Receptor elevations were included in the analysis and the model was run to calculated the effects of both simple and complex terrain.
Building Downwash	The PRIME algorithm was used to calculate building downwash.	The PRIME algorithm is appropriate for this analysis because it calculates the effects of both building wakes and recirculation cavities. Modeled receptors are located within building wakes and building recirculation cavities near this facility.
Receptor Network	100 meter course grid; 25 meter fine grid in the locations of the high concentrations.	This receptor network is sufficient to reasonably resolve the maximum concentrations.
Facility Layout	The facility layout included all buildings which could effect downwash. The stacks at this facility with horizontal releases or rain caps were modeled with an exit velocity of 0.001 m/s.	The facility layout was verified by comparing it to the submitted plot plan and aerial photographs of the area.

3.2 Emission Rates

The following table summarizes the emissions rates used in the modeling analysis.

Table 3.2 EMISSION RATES

Source ID	Source Description	CO (lb/hr)	NO_x (lb/hr)	SO_2 (lb/hr)	PM_{10} (lb/hr)	Lead (lb/hr)
HP1	Boiler #1	2.64E+00	3.14E+00	1.89E-02	2.39E-01	1.57E-05
HP2	Boiler #2	2.94E-01	3.26E+01	4.77E+01	1.28E-02	2.47E-04
HP3	Boiler #3	2.22E+00	1.32E+00	1.60E-02	2.01E-01	1.32E-05
HOLT1	Emergency Generator No. 1	2.01E+00	1.19E+00	3.17E-04	5.12E-03	2.64E-07
PYS1	Emergency Generator No. 2	1.31E+00	6.09E+00	4.00E-01	4.28E-01	6.76E-07
LFS1	Incinerator	2.00E-02	2.67E-01	7.24E-02	6.93E-02	2.43E-03
PUBSF1	Emergency Generator No. 3	3.29E+00	1.95E+00	5.20E-04	8.40E-03	4.33E-07
G35[a]	Emergency Generator No. 4	3.95E+00	1.83E+01	1.20E+00	1.29E+00	2.04E-06
B8	Boiler No. 8	6.89E-02	8.21E-02	4.92E-04	6.24E-03	4.10E-07
B9	Boiler No. 9	1.10E-01	1.31E-01	7.88E-04	9.98E-03	6.56E-07
B10	Boiler No. 10	6.20E-02	7.38E-02	4.43E-04	5.61E-03	3.69E-07
B11	Boiler No. 11	1.10E-01	1.31E-01	7.88E-04	9.98E-03	6.56E-07
B12	Boiler No. 12	2.21E-01	2.63E-01	1.58E-03	2.00E-02	1.31E-06
B13	Boiler No. 13	4.15E-01	4.94E-01	2.96E-03	3.76E-02	2.47E-06
B14	Boiler No. 14	2.36E-01	2.81E-01	1.69E-03	2.14E-02	1.41E-06
B15	Boiler No. 15	9.26E-02	1.10E-01	6.62E-04	8.38E-03	5.51E-07
B16	Boiler No. 16	9.50E-02	1.13E-01	6.78E-04	8.59E-03	5.65E-07
B17	Boiler No. 17	5.35E-02	6.37E-02	3.82E-04	4.84E-03	3.19E-07
B18	Boiler No. 18	4.90E-02	5.83E-02	3.50E-04	4.43E-03	2.92E-07
B19	Boiler No. 19	9.88E-03	1.18E-02	7.06E-05	8.94E-04	5.88E-08
B20	Boiler No. 20	1.24E-01	1.47E-01	8.82E-04	1.12E-02	7.35E-07
B21	Boiler No. 21	1.72E-02	2.05E-02	1.23E-04	1.56E-03	1.02E-07
B22	Boiler No. 22	4.18E-02	4.98E-02	2.99E-04	3.79E-03	2.49E-07
K23	Kiln K23	1.18E-03	1.40E-03	8.41E-06	1.07E-04	7.01E-09
K24	Kiln K24	8.24E-03	9.80E-03	5.88E-05	7.45E-04	4.90E-08
F25	Furnace F25	1.65E-02	1.96E-02	1.18E-04	1.49E-03	9.80E-08
F26	Melting Furnace F26	8.24E-03	9.80E-03	5.88E-05	7.45E-04	4.90E-08
B27	Boiler No. 27	7.21E-02	8.58E-02	5.15E-04	6.52E-03	4.29E-07
B28	Boiler No. 28	3.46E-02	4.12E-02	2.47E-04	3.13E-03	2.06E-07
B29	Boiler No. 29	3.29E-02	3.92E-02	2.35E-04	2.98E-03	1.96E-07
B30	Boiler No. 30	3.29E-02	3.92E-02	2.35E-04	2.98E-03	1.96E-07
B31	Boiler No. 31	1.39E-02	1.66E-02	9.94E-05	1.26E-03	8.28E-08
B32	Boiler No. 32	4.51E-02	5.37E-02	3.22E-04	4.08E-03	2.69E-07
B33	Boiler No. 33	4.08E-01	4.86E-01	2.92E-03	3.70E-02	2.43E-06
B34	Boiler No. 34	8.15E-02	9.71E-02	5.82E-04	7.38E-03	4.85E-07
B35	Boiler No. 35	1.94E-02	2.31E-02	1.39E-04	1.76E-03	1.16E-07
HP4	Boiler #4	6.00E+00	3.57E+00	4.28E-02	5.43E-01	3.57E-05

[a] Emissions from the generator G35 were assumed to only occur for 12 hours per day.

3.3 Emission Release Parameters

The following table summarizes the emission release parameters used in the modeling analysis.

Table 3.3 EMISSION RELEASE PARAMETERS

Source ID	Easting (m)	Northing (m)	Elevation (m)	Stack Height (ft)	Temperature (°F)	Exit Velocity (m/s)*	Stack Diameter (ft)
HP1	383074.0	4745868.0	1364.9	100.0	355.0	2.74	5.50
HP2	383074.0	4745868.0	1364.9	100.0	355.0	2.74	5.50
HP3	383059.0	4745893.0	1365.2	39.0	450.0	2.90	3.00
HOLT1	383443.0	4747165.0	1389.9	4.9	710.3	20.97	0.33
PYS1	382818.1	4746373.5	1369.6	63.0	975.0	50.29	0.67
LFS1	383250.0	4746870.0	1384.1	23.3	1550.0	7.00	1.00
PUBSF1	382980.0	4745852.0	1364.0	4.0	1250.0	48.80	0.30
G35	383990.2	4746180.5	1427.1	3.9	1004.0	34.74	0.32
B8	383029.0	4746085.0	1372.1	36.0	300.0	0.001	1.00
B9	383339.0	4746566.0	1385.9	46.0	450.0	0.001	1.00
B10	383308.0	4746740.0	1385.8	73.0	300.0	0.001	1.00
B11	383301.0	4746783.0	1385.7	73.0	300.0	0.001	1.00
B12	383250.0	4746866.0	1384.1	25.0	300.0	0.001	1.00
B13	383436.0	4747223.0	1389.9	48.0	300.0	0.001	2.00
B14	383313.0	4747108.0	1389.8	48.0	300.0	0.001	2.00
B15	383158.0	4746325.0	1386.5	35.0	450.0	0.001	2.00
B16	382810.0	4746387.0	1369.3	74.0	450.0	0.001	0.75
B17	382689.0	4745572.0	1357.9	33.0	450.0	0.001	1.50
B18	382117.0	4746092.0	1357.2	24.6	450.0	0.001	1.00
B19	382666.3	4746535.0	1366.0	24.6	450.0	0.001	0.66
B20	383164.1	4746729.0	1380.5	50.0	450.0	0.001	2.00
B21	382711.0	4746609.0	1366.1	29.0	300.0	0.001	0.83
B22	382711.0	4746610.0	1366.1	29.0	450.0	0.001	0.83
K23	383217.0	4746615.0	1381.9	16.0	300.0	0.001	0.75
K24	383042.0	4745832.0	1364.0	19.0	300.0	0.001	1.50
F25	383046.0	4745828.0	1364.0	22.0	300.0	0.001	1.50
F26	383049.0	4745831.0	1364.1	18.0	300.0	0.001	1.66
B27	382595.0	4746224.0	1364.5	22.0	450.0	0.001	1.00
B28	382526.6	4746289.0	1363.7	22.0	450.0	0.001	1.00
B29	383445.0	4745966.0	1413.0	37.0	450.0	0.001	1.00
B30	383493.0	4745945.0	1414.4	37.0	450.0	0.001	1.00
B31	383142.0	4746668.0	1379.4	50.0	300.0	0.001	0.83
B32	383161.4	4746727.0	1380.5	50.0	300.0	0.001	2.00
B33	383989.6	4746182.5	1424.8	40.0	300.0	0.001	1.25
B34	383991.4	4746181.5	1424.4	40.0	300.0	0.001	1.25
B35	383435.0	4747106.0	1389.8	48.0	300.0	0.001	2.00
HP4	383056.0	4745897.0	1365.2	39.0	323.0	5.43	5.00

* Stacks with an exit velocity of 0.001 m/s have horizontal releases or rain caps.

3.4 Results

3.4.1 Significant Impact Analysis Results

The impacts from the boiler were analyzed to determine if they exceed the SCLs. The results of the analysis demonstrate that the emissions from the boiler exceed the applicable SCLs. Therefore, facility-wide modeling must be conducted to determine if the facility meets the applicable NAAQS. The following table summarizes the results of the significant impact analysis.

Table 3.4 SIGNIFICANT IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Concentration (µg/m3)	SIL (µg/m3)	Exceeds SIL (Y/N)
PM_{10}	24-hr	11.5	5	Y
	Annual	2.2	1	Y

3.4.2 Full Impact Analysis Results

The results of the impact analysis demonstrate, to DEQ's satisfaction, that the ISU facility will not cause or significantly contribute to a violation of any ambient air quality standards. DEQ reviewed the PM_{10} impacts from this facility and determined that the addition of the natural gas-fired boiler will cause a significant increase in 24-hour PM_{10} impacts. However, DEQ reviewed the facility-wide PM_{10} impacts and determined that the facility will not cause or significantly contribute to a violation of the PM_{10} NAAQS. The following supports DEQ's finding:

1) The Portneuf Valley was determined to have attained the NAAQS for PM_{10} by December 31, 1996.
2) EPA has proposed the "Approval and Promulgation of Implementation Plans and Designation of Areas for Air Quality Planning Purposes: Portneuf Valley, Idaho, Area" (Federal Register, Volume 70, Number 97, May 20, 2005).

Ambient air monitoring data indicate an appropriate PM_{10} background concentration of 124 $\mu g/m^3$ for a 24-hour averaging period. Based on the above information DEQ determined that the facility's impact, when added to the background concentration, remains below the NAAQS for PM_{10}. The emissions of all other criteria pollutants, when added to their applicable background concentrations, do not exceed their applicable NAAQS. The following table summarizes the results of the criteria pollutant impact analysis.

Table 3.5 CRITERIA POLLUTANT IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration (µg/m3)	NAAQS (µg/m3)	Percent of NAAQS
PM_{10}	24-hr	17.9	124	141.9	150	94.6%
PM_{10}	Annual	3.4	28	31.4	50	62.8%
CO	1-hr	526.0	13,800	14,326.0	40,000	35.8%
CO	8-hr	285.2	4,600	4,885.2	10,000	48.9%
NO_2	Annual	65.2	32	97.2	100	97.2%
SO_2	3-hr	597.5	280	877.5	1,300	67.5%
SO_2	24-hr	211.3	94	305.3	365	83.7%
SO_2	Annual	43.9	21	64.9	80	81.1%

3.4.3 *Toxic Air Pollutants Results*

Table 3.6 summarizes the results of the TAP impact analysis. The results of the analysis demonstrate, to DEQ's satisfaction, that the emissions from the new natural gas-fired boiler will not cause an increase in TAP concentrations which exceed the allowable increments in IDAPA 58.01.01.585-586.

Table 3.6 TOXIC POLLUTANT RESULTS

Pollutant	Averaging Period	Modeled Concentration ($\mu g/m^3$)	AACC ($\mu g/m^3$)	Percent of AACC
Arsenic	Annual	0.00006	2.30E-04	26.1%
Cadmium	Annual	0.00032	5.60E-04	57.1%
Formaldehyde	Annual	0.02190	7.70E-02	28.4%
Nickel	Annual	0.00061	4.20E-03	14.5%